

placing the glass and the plastic within a microwave-transparent vise capable of exerting force and adapted to receive the shape of the glass and the shape of the plastic;

applying sealant only to the margin of the glass and the margin of the plastic, whereby the center of the glass and the center of the plastic are devoid of the sealant;

[applying force to the glass and the plastic by placing the glass and plastic into a microwave-transparent vise adapted] applying the force of the vise to hold together the glass and plastic;

placing the glass and the plastic into a vacuum chamber;

applying vacuum pressure to the glass and the plastic;

placing the vacuum chamber into a microwave oven; and

applying microwave radiation [to the glass and the plastic for an effective time] for a time effective to bond the glass and the plastic together whereby the shape of the glass and the shape of the plastic remain substantially unchanged and the center of the glass and the center of the plastic remain devoid of the sealant.

[applying sealant only to the margin of the glass and the margin of the plastic, whereby the center of the glass and the center of the plastic are devoid of the sealant;

applying microwave radiation to the glass and the plastic for an effective time.]

Please add claim 35 as follows:

39. The method of claim 26 wherein no sealant is applied to the margin of the glass and no sealant is applied to the margin of the plastic.

Please add claim 40 as follows:

40. The method of claim 26 wherein the margin of the plastic is notched to interlockingly receive the margin of the glass.

REMARKS

I. CLAIM REJECTION 35 U.S.C. §112, Second Paragraph

Applicant appreciates the Examiner's review of the present application and respectfully requests reconsideration in light of the above amendments and the following remarks.

Applicant notes with appreciation the Examiner's indication of allowable subject matter

in claims 15-33. As discussed below, the applicant has amended claims 15, 19, and 26 in order to more distinctly claim my invention. Further, I have removed the vacuum step from claim 19 both to make it clear that microwave action alone is sufficient to bind the glass and the plastic together and also to make claim 19 distinct from claim 26. Also, in amending claims 15, 19, and 26 to include reference to the glass and the plastic shapes remaining substantially unchanged, I have tried to make clear that the glass and the plastic substantially retain their same center and margin configuration after exposure to the microwave radiation. In addition, I have amended claim 15, 19, and 26 to try to make clear that the centers of the glass and the plastic remain devoid of sealant after their exposure to microwave radiation.

Applicant submits that the changes made to claims 17, 22, and 32 now properly limit the microwave range of these dependent claims. Applicant also submits that the changes made to independent claims 19 and 26 eliminate the lack of proper antecedent basis that Examiner rightfully noticed. Further, applicant submits that the changes made to independent claim 19 to differentiate it from claim 26 also eliminates the similarity of scope problem seen between dependent claims 21 and 31, 22 and 32, and 23 and 29. Finally, applicant submits that canceling claims 20, 24, 25 and 31 eliminates their similarity-of-scope problem to claims 30, 27, and 28, respectively. Thus, applicant submits that these changes have eliminated all the 35 U.S.C. §112 reasons for rejection that Examiner noted.

II. CLAIM REJECTION 35 U.S.C. §102(b)

“Under 35 U.S.C. §102, anticipation requires that each and every element of the claimed invention be disclosed in a prior art reference.” “Every element of the claimed invention must be literally present.”

The present invention discloses using microwave radiation to bond microwave-absorbing glass to various forms of plastic. Further, the present invention uses sealants applied to the margin of the composite optical material. Because this margin is exposed to air, the present invention includes using air-cured sealants. Thus, some of the sealants capable of being used with the present invention would fully cure regardless of whether they were exposed to microwave radiation or not.

The present invention uses microwave radiation, in part, to strengthen the sealant beyond its normal, no-microwave-exposure strength. There are two theories about why this phenomenon occurs: enhance kinetic reaction and greater substrate penetration. I simply know that the sealant is made stronger by exposure to microwave radiation and that this strengthening seems to be due to an inherent property of microwave radiation and not to the curing/absorbing properties of the sealant, itself.

Because *Wood* (US 6106665; Abstract, last line) teaches using radiation to cure an adhesive and the present invention does not use radiation to cure the sealant, the present invention is not anticipated by *Wood*. Further, though I am not claiming it in the present invention, another benefit of the present invention is that, when the plastic is annealed on to the potentially perfectly spherical glass surface by microwave generated heat, the peripheral distortions inherent in compression-molded plastics, such as polycarbonates, are reduced. *Wood* lacks this distortion reducing element and thus the present invention is not anticipated by *Wood*.

III. CLAIM REJECTION 35 U.S.C. §103

The present invention teaches using radiation to non-adhesively bond glass and plastic together. *Wood* (US 6106665; claim 1, line 2) teaches only using radiation to cure the adhesive. Thus, *Wood* teaches away from using radiation to directly bond glass and plastic together.

The present invention teaches using microwave radiation to non-adhesively, non-meltingly bond glass and plastic together in a non-optically damaging manner. *Elsner* (US 6165300; column 1; line 65) teaches using microwave energy to melt the adhesive, and the support material itself, and contemplates only adhesively bonding glass and plastic together. Thus, *Elsner* teaches away from the present invention method of non-adhesively bonding glass and plastic together. Further, *Elsner* is probably non-analogous art because melting the support material would probably ruin the precise curvatures and optical consistencies necessary in optical art. Thus, it would not occur to one of ordinary skill in the optical art to contemplate using *Elsner* in an optical invention.

The present invention teaches, among other things, the use of pressure to non-adhesively maximize the degree of optical contact between the centers of the glass and the plastic. *Vaughan* (US 4927480; column 1; line 50) teaches the use of pressure to decrease optical distortions and evenly spread an adhesive between the wafers to be adhesively bonded together. Thus, *Vaughan* teaches away from the present invention's use of pressure to increase the optical contact between the materials to be bonded.

The present invention teaches a non-deforming, no-adhesive-centrally method for bonding glass and plastic together. *Kohan* (US 5851328; Abstract; line 5) teaches the use of adhesives and pressure to deform the shape of the final optical composite. Thus, *Kohan* teaches away from the present invention method of non-deformingly bonding glass and plastic to one another.

As an aside, I should point out that I am fully aware of the optical advantages inherent in a composite ophthalmic lens, even when simply bonding two pieces of the same material together, as explained by *Kohan*. It has been a dream of the ophthalmic industry for decades.

The present invention teaches the use of pressure and vacuum to maximize the optical contact between the wafers to be bonded. *Petcen* (US 4543146; column 1; lines 33 and 53) teaches the use of uniform pressure to decrease optical distortions. *Petcen* contemplates only adhesively bonding optical materials together. Thus, *Petcen* teaches away from the present invention's use of pressure and vacuum to increase the amount of contact between the optical materials to be bonded.

Because *Petcen*, *Kohan*, *Vaughan*, and *Elsner* teach away from the present invention and because *Elsner* is probably non-analogous art, it would not occur one of ordinary skill in the optical art to contemplate combining them to approximate the present invention. Further, even in combination, the use of a sealant only on the composite material's margin makes, as the Examiner points out, the present invention structurally distinct from the combination of *Petcen*, *Kohan*, *Vaughan*, and *Elsner*.

Each of the Examiner's objections and rejections has been addressed. Accordingly, it is respectfully submitted that the application is in condition for allowance. Should the Examiner have any questions, comments or suggestions in furtherance of the prosecution of this application, the applicant would welcome a collect telephone call at the Examiner's convenience to the telephone number indicated below.

Respectfully submitted,

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